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THE INSECT PEST SURVEY BULLETIN

A periodical review of entomological conditions throughout the United States,
issued on the first of each month from April to November, inclusive.

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BUREAU OF ENTOMOLOGY
UNITED STATES
DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING

OUTSTANDING ENTOMOLOGICAL FEATURES IN THE UNITED STATES FOR OCTOBER, 1924

We wish to express, in this the closing number of Volume 4 of the Insect Pest Survey Bulletin, our sincere appreciation of the continued support and hearty cooperation that we have received from our collaborators. We now have a force adequate to give a very satisfactory cross section of the entomological situation of the United States, and this cross section is being very rapidly realized.

Within the next two months we will issue an index to this volume.

During the month just passed white grubs have become decidedly conspicuous in the Ohio River Valley and in the Upper Plains region, southward to Kansas.

The Hessian fly situation is very favorable throughout the greater part of the wheat belt. Planting after the fly-free date has been generally adopted over most of this territory. The situation is not so encouraging, however, in Kansas.

The chinch bug as a whole has dropped into a position of secondary importance over most of its range, but heavy migration to hibernating quarters was observed in parts of Kansas.

The European corn borer situation is the most serious in the short history of this pest in North America. A general summary of the situation is contained in this issue of the Survey Bulletin.

The Japanese beetle situation is very encouraging, the spread being much less than was anticipated earlier in the season, and in general extends but little more than one township beyond the area infested last year.

The Oriental peach moth is now quite generally distributed over the eastern peach belt, and was seriously abundant during the past year in Pennsylvania and New Jersey. In eastern Maryland it was not nearly as severe as during 1923 and caused but little damage. In this number of the Bulletin is published the results of a recent survey made by the Bureau of Entomology, Federal Horticultural Board, and State Agricultural agencies cooperating.

A very heavy infestation of a green bud-moth (Argyroplote variegana Hbn.) is reported from the Annapolis Valley section, Nova Scotia. This pest is not recorded from the United States.

The Mexican bean beetle is now recorded as covering practically the entire State of Ohio, eastward to the southeastern tier of Counties in Pennsylvania, and eastward into West Virginia and North Carolina. One of the interesting features of the spread of this insect has been the extremely small gain in territory to the south of the region originally infested in Alabama. The insect has swept northward and eastward to the Great Lakes, but has not yet reached the southern third of the State in which it was originally discovered east of its normal habitat in the Rocky Mountain Region.

On the whole there has been a decided reduction in the amount of damage done by the boll weevil over previous years. However, present indications in the southeastern States point to large numbers going into hibernation this fall.

The lesser corn stalk-borer is reported as having been present in destructive numbers in Porto Rico for the first time in the last fifty years.

A very successful control campaign against the gipsy moth has been waged in New Jersey, the infested territory having been cut nearly in half by three years' work directed toward its extermination in that State.

During the last weeks in October unusually heavy flights of the lime tree looper were reported from Massachusetts, Connecticut, and New York.

The white-marked tussock moth is reported as being on the ascendency in Ohio and Nebraska.

The newly introduced birch leaf-miner, Fenusa purila Klug, appears to be generally established in the eastern part of New York State.

A moth, Ocnerostoma piniariella Zell., which attacks pine needles in parts of Europe was caught in considerable numbers at a trap light in Ithaca, New York, during the last July. As far as we can ascertain there is no recorded note on the occurrence of this insect in the United States, but we are informed that Professor Comstock collected this insect at Ithaca in 1882.

CEREAL AND FORAGE - CROP INSECTS

GENERAL FEEDERS

GRASSHOPPERS (Acridiidae)

- Wisconsin S. B. Fracker (September): Grasshoppers are reported from Dane County as being more than usually abundant and from Dodge and Jackson Counties as being very numerous. A few have appeared also in Oneida County. In Portage County they ruined 35 per cent of the clover seeding.
- Illinois W. P. Flint (October 20): Grasshoppers have been more abundant than last fall, but not destructive enough to cause any serious damage this year. They may cause some trouble next season.
- Nebraska M. H. Swenk (September): Report of injury by grasshoppers early in September on very young alfalfa in Saline County was the only injury of this sort that came to our attention during the fall.
- Kansas J. W. McColloch (October 17): Injury by grasshoppers (Melanoplus atlantis Riley) shows a decrease over last month although they are still abundant in some areas.

WHITE GRUBS (Phyllophaga spp.)

- Ohio H. A. Gossard (October 21): We have had a good many inquiries for the control of white grubs with reports that these insects are very numerous in cornfields and on sod land.
- Indiana J. J. Davis (October 22): Continue to receive reports from various sections, especially of injury to lawns and corn in the northern part of the State. They were reported common in newly sown wheat fields and doing some damage in west-central Indiana. A report also came to us the past month of injury to privet hedge at Toledo, Ohio.
- Illinois W. P. Flint (October 20): Reports of injury by white grubs continue to come in from many points in central and northern Illinois. Examinations by Mr. J. H. Bigger, of cornfields in Warren County, showed that where corn and soybeans were planted together practically no damage to the soybeans had resulted in fields where corn was nearly destroyed. The grubs were mainly in their second year, and in some fields, second and third year grubs were found together. In eastern Illinois a number of acres have been found where injury by white grubs occurs in corn following corn.
- Wisconsin S. B. Fracker (September): Reported from Marinette and Sauk Counties attacking potato.
- Nebraska M. H. Swenk (September): White grubs continue to be complained of as doing injury in several counties in eastern Nebraska during early September.

Kansas J. W. McCulloch (October 18): The wheat white grub (Phyllophaga lanceolata Say) is reported as abundant in some wheat fields in Sumner and Kingman Counties.

WHEAT

HESSIAN FLY (Phytophaga destructor Say)

- Ohio H. A. Gossard (October 21): There have been no very notable developments in Ohio entomology the past month unless it may be noted that an examination of the puparia of the Hessian fly at our Medina breeding station indicated that a large percentage of the insects had emerged early. We estimate that 80 to 90 per cent of them had emerged by September 18, the date we put out our emergence cages. Since very little wheat was sown until the safe-seeding dates, I think all Ohio will be fairly safe from the Hessian fly the coming year. Only fields that were seeded prior to September 15 could have been severely attacked this fall and the number of such seedings was very few.
- Indiana J. J. Davis (October 22): The Hessian fly situation is satisfactory. The fly-free date has been satisfactory so far as we have observed. Early sown wheat is noticeably more heavily infested than in 1923.
- Illinois W. P. Flint (October 20): The first wave of the emergence of the fly came practically on normal schedule. Wheat sown September 15 was rather heavily infested, that sown on the 20th was slightly infested, and that on the 25th contained but a trace of infestation. These figures apply to the vicinity of Urbana. Early sown wheat, or that sown ten days or more before the fly-free date, seems to be infested quite heavily in the central section of the State, but very slightly infested in the southern end where only a small number of the fly could be found in the wheat stubble in August. An occasional fly is emerging at the present time, but not enough to cause any serious damage.
- Nebraska M. H. Swenk (September): During the month of September the main fall brood of the Hessian fly was active in the fields, and reached its maximum abundance a little later in the month than usual, especially in the southern counties of Nebraska. Twenty-four counties of southeastern Nebraska are cooperating with the College of Agriculture, through the county agricultural agents and the Department of Entomology, in awaiting the announced fly-free date. Beginning on September 3, the State Entomologist has issued a series of bulletins indicating the progress of the emergence and disappearance of the Hessian fly, nine such bulletins having been issued up to and including October 1. The fly-free date was announced for the northeasternmost counties of Nebraska on September 28, for several counties south of these on September 29, for a number of counties along the Platte Valley westwardly on September 30, and for the remaining counties north of the Platte River as well as several western counties on October 1. For the southernmost Nebraska counties the fly-free date is expected to arrive during the first week in October.

Station No. 1 (Wahoo)

Station No. 2 (Beatrice)

Per cent emerged puparia : Number of eggs : Per cent emerged puparia : Number of eggs				on 100 stubble plants : on 100 wheat : on 100 stubble plants : on 100 wheat				
				plants : plants : plants : plants				
September 26	93.4	:	1,043	:	September 26	36.9	:	65
" 27	95.1	:	1,295	:	" 27	48.6	:	705
" 28	95.7	:	745	:	" 28	49.8	:	660
" 29	95.6	:	66	:	" 29	48.6	:	1,045
" 30	95.4	:	134	:	" 30	53.5	:	975
		:		:	October 1	50.5	:	1,010
		:		:	" 2	65.0	:	115
		:		:	" 3	65.1	:	1,665
		:		:	" 4	83.9	:	70
		:		:	" 5	73.6	:	380
		:		:	" 6	87.4	:	0

Iowa M. E. Swenk (September): On September 25, at the Harrison Co., Iowa, station, 51 per cent of the flies had emerged; at the Mills Co., Iowa, Station 42 per cent had emerged; and at the Henry Co., Iowa, Station, 66 per cent had emerged.

Kansas J. W. McColloch (October 18): It is a little early to determine the Hessian fly situation in fall-sown wheat. There was a large emergence during the last of September and many eggs were deposited on volunteer wheat. Maggots are now present on the volunteer wheat in many sections of the State and there is some complaint of injury to early sown wheat.

EUROPEAN GRAIN APHID (*Siphocoryne avenae* Fab.)

Kansas J. W. McColloch (October 17): This aphid has been found in large numbers on the stems and roots of volunteer wheat at St. Francis, Lenora, and Manhattan. It has also been taken on rye at Manhattan.

PLAINS FALSE-WIREWORM (*Eleodes opaca* Say)

Kansas J. W. McColloch (October 15): Severe injury to fall-sown wheat has been reported during the last month from Osborne, Rocks, and Trego Counties. It has been very dry in these counties and the seed is not germinating. Reports from Osborne County state that thousands of acres will have to be replanted.

CORN

EUROPEAN CORN BORER (*Pyrausta nubilalis* Hbn.)

GENERAL Geo. A. Dean (October 29): The nearly completed annual survey activities have disclosed such alarming facts as a spread of 150 per cent in Ohio, with an average increase of 100 per cent in intensity; in Michigan a spread of 300 per cent of the original territory, with a considerable increase in intensity; and a spread of 150 per cent in northwestern Pennsylvania, with a marked increase in intensity. In addition to these developments, a limited infestation has appeared on the northeastern side of Staten Island.

One new spot of infestation has appeared on Long Island close to the commercial sweet corn center, and a series of infestations has developed along the south shore of Connecticut in the towns of Bridgeport, West Haven, Old Lyme, New London, and Stonington.

The Canadian situation, which last year seemed to be fairly well in hand, has broken out with renewed intensity, and the principal dent corn growing areas in Essex and Kent Counties, Ontario, are now so seriously infested as to cause considerable commercial injury. The prevalence of moisture, heavy dews, and high humidity during the incubation of the eggs and during the early or first instar stage of the larvae apparently caused very little mortality of the eggs and permitted large numbers of the larvae to become established in the tassels, leaves, stalks, and ears of the corn plants.

In Massachusetts there has been not only a very marked decrease in the intensity of infestation, but also very little spread in the infestation. This decrease apparently is due principally to the adverse climatic conditions which prevailed during the summer of 1923. The thorough cleanup of fields, gardens, and small weed areas and the fall plowing of practically 90 per cent of the cultivated fields probably also contributed considerably to the decrease in the infestation. In eastern New York the infestation remains about the same, that is, there has been very little spread and very little increase in the intensity of the infestation.

A FLOWER BEETLE (Euphoria sepulchralis Fab.)

Illinois

W. P. Flint (October 20): Adults of this insect have been reported causing severe injury to corn in a number of fields in southern Illinois.

CHINCH BUG (Blissus leucopterus Say)

Kansas

J. W. McColloch (September 29): A farmer at Logan, Kans., reports that he planted 300 acres of wheat on Sudan grass stubble and the chinch bugs have taken all of it. (October 18): Rain in many parts of the State prevented serious damage to corn and sorghums outside of that occurring at the time of migration from the small grains. Bugs are still abundant, however, and the air has been full of adults flying to the grassland for hibernation.

CORN EARWORM (Heliothis obsoleta Fab.)

GENERAL

F. C. Bishopp (September 30): Both early and late field corn examined during the first part of September in the States of Georgia, Alabama, Mississippi, and Louisiana were found to be heavily infested with the corn earworm. Counts showed 90 to 100 per cent of the ears infested. In most fields the percentage ran about 99.

CUTWORMS (Noctuidae)

Wisconsin

S. B. Fracker: Reported from Adams, Chippewa, Clark, Dane, LaCrosse, Marquette, Vernon, and Winnebago Counties.

BANDED IPS (Glischrochilus fasciatus Oliv.)

Ohio

H. A. Gossard (October 21): Received on October 11 from Bloomingburg, injuring the kernels of well-matured corn.

ALFALFA AND CLOVER

GREEN JUNE BEETLE (Cotinis nitida L.)

Kansas

J. W. McColloch (October 17): Grubs were received from Newman, Kans., which are apparently this species. They were abundant in an alfalfa field and the plants are dying in large areas.

CLOVER-SEED CHALCID (Bruchophagus funebris Howard)

Indiana

J. J. Davis (October 22): A report dated October 14 has been received from the county agent at Auburn, Ind., to the effect that a field of Mammoth clover seed has been ruined by the seed chalcid. The seed was so badly affected that the farmer quit threshing.

RYE

SPOTTED CUCUMBER-BEETLE (Diabrotica 12-punctata Fab.)

Kansas

J. W. McColloch (October 17): Larvae of this species have caused serious damage to two fields of fall-sown rye. In both cases the rye was planted on land that had been in Sudan grass during the summer.

GRASS

CORRECTION

On page 219, Vol. 4, No. 6, a scale insect, Eriococcus sp., reported by Mr. C. R. Cleveland, was later determined by Dr. T. H. Frison as Eriopeltis festucae Fonsc.

F R U I T I N S E C T S

JAPANESE BEETLE (Popillia japonica Newm.)

GENERAL

Loren B. Smith (October 14): With reference to the spread of the Japanese beetle during the current year, I may say that the insect has not spread as much as was anticipated early in the season. In Pennsylvania the insect has increased the area of its distribution for a distance of about one township in width outside of the area infested last year. In northern New Jersey the spread amounted to about the same as in Pennsylvania; in other words, about 8 to 12 miles outside the previously infested territory. We have found beetles quite generally distributed throughout southern New Jersey and believe the insect to occur more or less generally throughout that territory. There have been numerous reports of the insect occurring in States other than New Jersey, Delaware, and Pennsylvania, but we have followed up all such reports that have come to our attention and in no case have we been able to verify infestations occurring in outside States.

The beetles continue to increase in the older infested territory and during the season just passed we have found as high as 1,500 larvae to a square yard in certain localities. As a result, during the past summer the area of heavy infestation was considerably larger and more damage occurred to both peaches and apples, except where they were thoroughly sprayed, than has occurred heretofore.

APPLE

APPLE CURCULIO (Tachyoterellus quadrigibbus Say)

Wisconsin

S. B. Fracker (September): Fall flight of this insect associated with Myzus persicae occurred in Dane County.

APPLE FLEA WEEVIL (Orchestes pallicornis Say)

Illinois

W. P. Flint (October 20): This insect was found by Mr. S. C. Chandler to be less abundant in southern Illinois than for several years, but it has been increasing in western Illinois and is now causing injury in a number of orchards in that part of the State.

GREEN BUD MOTH (Argyroplote variegata Hbn.) ?

Canada

Canadian Insect Pest Review (September): The green bud moth has been abundant to an unusual degree in the Annapolis Valley, having been especially numerous in the vicinity of Wolfville and Kentville. This is the most pronounced outbreak in ten years.

A FLOWER BEETLE (Euphoria sepulchralis Fab.)

Kansas

J. W. McColloch (October 17): These beetles are still common on apples in this vicinity. Injury has also been noted on pears and pumpkins. In practically all cases the injury is secondary, the fruit having been bruised by a hailstorm over a month ago.

CODLING MOTH (Carpocapsa pomonella L.)

Washington

E. J. Newcomer (September 23): Second-brood moths emerged in considerable numbers during the last half of August and the first week of September. Growers report large numbers of worms entering the fruit during this period. Pupation occurred as late as September 1, which is about two weeks later than usual.

A. L. Melander (September 30): I recently drove through this district (Okanogan Valley) and noticed that worm conditions were unusually severe. Last year a frost at blossoming time destroyed virtually all but the topmost blossoms. In some of the orchards it seemed strange to see the only crop of apples perched on the top of the trees. Naturally these apples were out of reach of effective spraying and thus became wormy.

Spokesman Review (September 28): Worm damage is running high in the crop of apples at Brewster, according to N. W. Hogge, manager of the Northwestern Fruit Exchange. One grower bought 900 apple boxes and packed 115, nearly 80 per cent of the fruit being worm-damaged.

E. J. Newcomer (October 20): In 1920 and 1921 several species of codling moth parasites were introduced into the Yakima Valley from the eastern United States. One of these, Ascogaster carpocapsae Vier., has become established, and a few specimens were recovered in 1923 from the orchard in which introductions were made. In 1924, this orchard was cut down, but eight trees were banded in an orchard about a quarter of a mile west. A few parasitized worms were found during July, and the number increased during the latter part of the summer. Of 2,222 worms collected from August 1 to October 20, 348 were parasitized, or 15.7 per cent. Forty adult Ascogaster emerged during the summer, the rest hibernating. These will be released in other orchards in the spring of 1925.

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

Indiana J. J. Davis (October 22): The San Jose scale situation is well in hand in Indiana. The absence of scale on fruit at the State Fair this year was a good indicator of the conditions found in the field. The general use of the oil emulsions and other effective scale controls are responsible for this cleanup as evidenced by the fact that orchards not properly treated are heavily infested with the scale.

APPLE MAGGOT (Rhagoletis pomonella Walsh.)

New York C. R. Crosby (September 29): At Massena this insect was attacking apple.

EUROPEAN RED MITE (Paratetranychus pilosus C. & F.)

Connecticut Philip Gaman (October 24): Attacking apple, but seems to be less abundant than for several seasons.

Washington E. J. Newcomer (September 23): This species has been found in orchards throughout north-central Washington. At Kelowna, B. C., a very severe infestation was found August 29 in a pear orchard. Predacious enemies appeared to be absent in this orchard, and the infestation was as severe as it is in June farther south.

PEARS

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

New York C. R. Crosby (October 8): Infested pears received from Penn Yan. Eight large trees had practically no good fruit.

PEACH

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

Georgia

Oliver I. Snapp (October 15): A few second-generation eggs are still being deposited. This is an unusually late record for C. nenuphar eggs in this locality (Fort Valley).

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

Georgia

Oliver I. Snapp (October 15): A majority of the growers in the Georgia Peach Belt will replace lime-sulphur with lubricating-oil emulsion for the dormant spray this winter. The emulsion will be retailed by local manufacturers at around 25 cents a gallon. On account of this low price very little of the homemade emulsion will be used.

ORIENTAL PEACH MOTH (Laspeyresia molesta Busck)

Connecticut

Phillip Garman (October 24): Fruit injury reported from Fairfield and New Haven Counties. More abundant than any previous year.

NOTE:

The following distribution records are the results of a joint survey carried on during the past season by the Bureau of Entomology, the Federal Horticultural Board, and the State Agricultural agencies cooperating:

Virginia

Typical injury by Oriental peach moth was observed at Norfolk, in the southeastern corner of this State, and Covington, on the western boundary.

North Carolina

Positive evidence of this pest was found in Alexander, Catawba, Mecklenburg, and Wake Counties. The survey covered the following Counties without finding evidence of the pest: Buncombe, Burke, Watonga, Guilford, Moore, and Columbus Counties.

South Carolina

Positive evidence of the presence of the Oriental peach moth was found in Jasper, Abbeville, Anderson, Charleston, and Spartanburg Counties. The survey also covered Aiken and Barnwell Counties but no positive evidence of the presence of the insect was found in these two counties.

Georgia

Positive evidence of the Oriental peach moth was found in Fulton, DeKalb, Putnam, Baldwin, Bibbs, Houston, Crisp, Thomas, Lowndes, Richmond, Burke, Chatham, and Glynn Counties. The following Counties were surveyed without results: Morgan, Jasper, Monroe, Pike, Upson, Meriwether, Troup, Coweta, Campbell, Muscogee, Stewart, Sumter, Dooly, and Terrell Counties.

Florida

Positive evidence of the Oriental peach moth was found in Madison, Suwanee, Columbia, Baker, Alachua, Nassau, Duval, St. Johns, Marion, Lake, Sumter, Polk, Escambia, Okaloosa, Gadsden, and Leon Counties. No evidence of this insect was found in Putnam, Volusia, Seminole, Orange, Hillsboro, and Lee Counties.

- Indiana Positive evidence of the presence of this insect was found in Warrick, Vanderburg, and Knox Counties in the southwestern corner of the State.
- Tennessee Positive evidence of the presence of the Oriental peach moth was found in Henry, Gibson, Madison, Dixon, Davidson, Williamson, Rutherford, Maury, Bedford, Lawrence, Franklin, Hamilton, Bradley, Monroe, Loudon, Knox, Hamblen, Greene, Washington, and Sullivan Counties. Examinations made in McMinn and Coffee Counties failed to show the presence of this insect. The distribution in this State is general.
- Alabama Positive evidence of the Oriental peach moth was found throughout this State, records having been received from Madison, Etowah, Calhoun, Jefferson, Shelby, Dallas, Butler, Montgomery, Pike, Lee, Escambia, and Mobile Counties. Examinations made in Baldwin, Clarke, Monroe, Marengo, Bullock, Macon, Cullman, Morgan, and Limestone Counties failed to give evidence of this pest.
- Mississippi Adults were reared or typical injury observed in the following Counties: DeSoto, Marshall, Tishomingo, Lee, Coahoma, Clay, Washington, Hinds, Lauderdale, Forrest, Pearl River, Harrison, and Jackson Counties. Examinations made in Pike, Lincoln, Jones, Madison, Oktobeha, Lowndes, Leflore, Sunflower, and Alcorn Counties failed to show evidence of this pest.
- Louisiana Examinations made in Caddo, Webster, Jefferson, and Orleans Parishes failed to show evidence of the presence of this pest in Louisiana.
- Missouri The only examinations made in this State were carried on in McDonald County where typical injury of Oriental peach moth was observed.
- Arkansas A very complete survey was carried on in this State and positive evidence of the presence of this pest seemed to be confined to the Counties along the Mississippi River. The following Counties were found to be infested: Mississippi, Cross, Lee, Phillips, and Desha Counties. What appeared to be typical injury by this pest was observed in Pulaski County in the center of the State. What appeared to be this insect was collected in Bentonville, in the northwestern corner of the State, but up to the time of the report the moth had not been reared. A survey carried on in Carroll, Boone, Newton, Washington, Crawford, Johnson, Polk, Searcy, Franklin, Sebastian, Garland, Sevier, Howard, Pike, Clark, Dallas, Jefferson, Cleveland, Bradley, Ouachita, Hempstead, Miller, Pope, Lafayette, Columbia, Union, Drew, Ashley, Chicot, St. Francis, Jackson, and Craighead Counties failed to show evidence of the presence of this insect.
- Texas A survey carried on in the northeastern corner of this State, covering Marion, Harrison, Henderson, Cherokee, Anderson, Smith, and Hopkins Counties, failed to show evidence of the presence of this insect.

PEACH BORER (Aegeria exitiosa Say)

Georgia

Oliver I. Snapp (October 15): Peach borer moths are on the wing unusually late in the Georgia Peach Belt this year. Many are just now emerging. An excessive rainfall and low temperatures during September are factors responsible for the late emergence this year. Weather conditions during the last week have been ideal for putting out paradichlorobenzene. Many growers have taken advantage of these conditions for gassing their trees.

Illinois

S. C. Chandler (October 9): Moth traps and orchard examinations show a rather late hatch of worms in the latitude of Carbondale.

WEST INDIAN PEACH SCALE (Aulacaspis pentagona Targ.)

Louisiana

H. K. Plank and assistants: (September 25): This scale appears to be considerably less abundant than last year, and only locally distributed, at New Orleans.

GREEN PEACH APHID (Myzus persicae Sulz.)

Wisconsin

S. B. Fracker (September): A heavy flight of fall migrants occurred in Dane County, October 8 to 16.

PLUM

SNOWY TREE-CRICKET (Oecanthus niveus DeG.)

Idaho

Monthly Letter of Bureau of Entomology No. 124 (August): M. A. Yothers of the Yakima, Washington, Laboratory, was in southern Idaho August 11 to 13, at the request of Prof. M. E. Dean, Director of Plant Industry for Idaho, investigating a serious outbreak of the snowy tree-cricket, which is injuring prunes.

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

Wisconsin

S. B. Fracker (September): Reported from Columbia and Price Counties attacking plum.

GRAPE

GRAPE PHYLLOXERA (Phylloxera vastatrix Planch.)

Ohio

H. A. Gossard (October 21): This insect was received on October 1 from Mesopotamia on grape.

PECAN

PECAN CIGAR CASE-BEARER (Haploptilia carvaefoliella Clem.)

Alabama

H. K. Plank (October 10): In this general region, Grand Bay, overwintering larvae are very abundant about buds and twigs. Conditions point to a severe infestation of this species here next spring.

DIFFERENTIAL GRASSHOPPER (Melanoplus differentialis Thos.)

Texas

A. I. Fabis (September 24): Melanoplus differentialis Thos. is very destructive to pecans along Colorado River, Pecan Bayou, and Conchos. They fed extensively on immature pecan nuts during July and August and defoliated trees during September. Defoliation during last season caused shrinkage of kernels and rendered crops from infested trees unmarketable.

LITTLE HICKORY APHID (Monellia carvella Fitch)

Texas

A. I. Fabis (September 24): Very injurious on pecan trees at Brownwood which were sprayed with arsenicals during the summer - rare on unsprayed trees.

PECAN LEAF CASE-BEARER (Acrobasis nebulella Riley)

Texas

A. I. Fabis (September 24): Larvae were found abundant on native pecan timber along the headwaters of the South Llano River. This insect does not occur north of that section.

PECAN NUT CASE-BEARER (Acrobasis hebesella Hulst)

Texas

A. I. Fabis (September 24): Infestation by the second generation was very light locally, but more abundant in San Saba and southward.

CITRUS AND SUBTROPICAL FRUITS

FLORIDA RED SCALE (Chrysomphalus ficus Ashm.)

Louisiana

H. K. Plank and assistants: The freeze of last January at New Orleans, when the temperature went to about 18° to 19°F. in nearly all parts of the city, practically eradicated this scale on plants growing out of doors; to date we have been able to find only a few scales. On host plants growing indoors it continues to be a pest of considerable importance. This insect is attacking Cinnamomum camphora, Citrus spp., Ligustrum spp., and numerous nursery and greenhouse plants.

DICTYOSPERMUM SCALE (Chrysomphalus dictyospermi Morg.)

Louisiana

H. K. Plank and assistants (September 25): Owing largely to the freeze of last January, when the temperature went to about 18° to 19°F. in nearly all parts of the City of New Orleans, this scale is very scarce except in a very few apparently sheltered locations. Some parasites have been noted again this year, but their work at present is inconsiderable. This insect is attacking Cinnamomum camphora and Ficus repens.

RED SPIDERS (Tetranychus spp.)

Louisiana H. K. Plank and assistants: Red spiders have been very abundant at New Orleans and vicinity this season, and particularly injurious to Cupressus sempervirens pyramidalis, Citrus spp., and arborvitae. These infestations were much augmented by the hot, dry weather which prevailed in this general locality throughout the summer.

GLOVER'S SCALE (Lepidosaphes gloverii Pack.)

Louisiana H. K. Plank and assistants (August 30): On trees unsprayed since last season at Willswood and on some unsprayed since July of this year, this scale has increased considerably, but is still comparatively scarce. The freeze of last January, when the temperature went to about 16°F., is very largely responsible for the marked decrease from last year. This insect is attacking Citrus spp.

CHAFF SCALE (Parlatoria pergandii Comst.)

Louisiana H. K. Plank and assistants (August 30): On trees unsprayed since the fall of 1923, and on some unsprayed since July of this year, this scale has increased considerably, but is still comparatively scarce. The freeze of last January, when the temperature went to about 16°F., is very largely responsible for the marked decrease from last year. This insect is attacking Citrus spp.

TRUCK - CROP INSECTS.

GENERAL FEEDERS

APHIDIDAE

Wisconsin

S. B. Fracker (September): Reported from Manitowoc and Waupaca Counties on dill.

GARDEN SLUG (Agriolimax agrestis L.)

Ohio

H. A. Eossard (October 21): We have had a good many inquiries for the control of garden slugs during the past month.

Indiana

J. J. Davis (October 22): Garden slugs seem to be quite common in gardens the past two weeks in several sections of the State as far south as Indianapolis. Vegetable garden plants are commonly attacked.

POTATO AND TOMATO

POTATO BEETLE (Leptinotarsa decemlineata Say)

Wisconsin

S. B. Fracker (September): Reported from the following counties: Ashland, Chippewa, Manitowoc, Oneida, Sawyer, Washburn, and Waupaca.

LEAFHOPPERS (Jassidae)

Wisconsin

S. B. Fracker (September): Reported from Dane, Oneida, and Washburn Counties.

CABBAGE

IMPORTED CABBAGE WEBWORM (Hellula undalis Fab.)

Mississippi

M. M. High (October 3): The imported cabbage webworm is causing considerable injury to turnip, mustard, etc., and is receiving some attention.

CUTWORMS (Noctuidae)

Wisconsin

S. B. Fracker (September): Reported from Ashland and Chippewa Counties.

BEANS

MEXICAN BEAN BEETLE (Epilachna varipuncta Muls.)

Pennsylvania

Neale F. Howard (October 24): The Mexican bean beetle was reported on September 9 from Beaver County, one county north of the territory in this State recorded in the last number of the Survey Bulletin.

North Carolina

Neale F. Howard (October 24): The most recent reports indicate that the pest has been found in Surry, Yadkin, Catawba, and Mecklenburg Counties.

- West Virginia Neale F. Howard (October 24): The pest was reported during early September from the northernmost part of the State, having been found in Ohio and Hancock Counties.
- Ohio Neale F. Howard (October 24): In Ohio practically the entire State is now infested with the exception of the northwestern two tiers of counties extending from Erie County westward.
- Alabama Neale F. Howard (October 24): Along the southern border a very slight spread is being reported in this State, in no case being more than one county beyond the territory infested in 1921.
- New Mexico J. R. Douglas (October 18): The first bean beetles were observed in fall migration up the Glover's Canyon on September 5 about 10 a.m. There was very little or no wind blowing in the canyon at that time. There were large numbers of beetles in the Glover field on the 10th and 12th of September, the beans were harvested on the 16th and 17th, and on the 25th there were only a few straggling beetles found in the field on horse nettle and Canadian thistles.

A ROOT APHID (Tychea sp.?)

- Nebraska M. H. Swenk (September): From Franklin County we received a report of a root aphid, attacking bush beans, that we have not identified exactly but that are believed to be a species of Tychea.

PEAS

PEA APHID (Illinoia pisi Kalt.)

- Virginia Herbert Spencer (October 18): During the past week we have had complaints of infestations of pea aphids on fall English peas at Norfolk. The majority of the farmers affected are using 3 per cent of nicotine dust. A few are spraying with nicotine sulphate and soap sprays.
- Wisconsin S. B. Fracker (September): Reported from Columbia, Eau Claire, and LaCrosse Counties, attacking peas.

CUCUMBERS

STRIPED CUCUMBER BEETLE (Diabrotica vittata Fab.)

- Wisconsin S. B. Fracker (September): Reported from Adams, Ashland, Columbia, Dodge, Jackson, Manitowoc, and Winnebago Counties.

CELERY

AN APHID (Aphis abbreviata Patch)

- New York C. R. Crosby (September 23): There are many more of these than I ever saw before, which probably accounts for an increase in the amount of celery mosaic over previous seasons.

PARSNIPS

APHIDIDAE

Wisconsin

S. B. Fracker (September): Reported from Manitowoc County attacking parsnips.

S O U T H E R N F I E L D - C R O P I N S E C T S

COTTON

BOLL WEEVIL (Anthonomus grandis Boh.)

GENERAL STATEMENT

Geo. A. Maloney (October 16): On a recent trip made with a committee of the Cotton Council of the Southern Agricultural Workers from September 22 to October 1, I found conditions favorable for weevil multiplication and a probable rather large number to go into hibernation at Florence and Hartsville, S. C., Valdosta, Ga., Gainesville, Fla., and Auburn, Ala. Rains were frequent in these localities during the latter half of September, with cotton producing a plentiful supply of late squares. Weevil punctures of late-set bolls were fairly numerous at these points.

COTTON LEAFWORM (Alabama argillacea Hbn.)

Illinois

W. P. Flint (October 20): The first time for two years no moths of this species have been taken to date in moth traps conducted at Urbana. Only one specimen has been taken in moth traps at Aurora. Usually thousands of specimens of this moth are taken in these traps before fall.

BOLLWORM (Heliothis obsoleta Fab.)

Illinois

S. C. Chandler (October 8): About 1 per cent of bolls is infested. This is the first time this insect has been noted on cotton since the revival of cotton growing three years ago.

COTTON RED SPIDER (Tetranychus telarius L.)

Illinois

S. C. Chandler (September 29): Light infestation of red spider in the vicinity of Cairo. Small patches killed.

TOBACCO

CUTWORMS (Noctuidae)

Wisconsin

S. B. Fracker (September): Reported from Vernon County attacking tobacco.

SUGAR CANE

SUGAR CANE BORER (Diatraea saccharalis Fab.)

Louisiana T. E. Holloway and W. E. Haley (October 28): Our field examinations, which so far cover only a small portion of the sugar parishes, indicate that the borer damage started late, after the cold winter, and did not reach its usual proportions. In fact, on the more northern plantations, the damage is often very low. A comparatively high infestation has been traced to the planting of very badly bored seed cane.

LESSER CORN STALK-BORER (Elasmopalpus lignosellus Zell.)

Porto Rico A. H. Rosenfeld (September 29): Crop damaged 1 per cent. The Assistant Entomologist of the Insular Experiment Station mentioned this damage to me early in the month, which we both thought was being caused by a crambid. He has just returned from another trip to Villalba and tells me that the insect is Elasmopalpus lignosellus. There is no recent reference to this species in Porto Rico, Wolcott in his check list (Journal P. R. Dept. Agr. VII-1, p. 199) mentioning it as having been reported a generation or more ago by Moschler and Gundlach.

FOREST AND SHADE-TREE INSECTS

GENERAL FEEDERS

GIPSY MOTH (Porthetria dispar L.)

GENERAL John N. Summers (September 1, 1923-September 1924): There was a general infestation over all of the older infested territory in New England. While the major portion of it was not infested sufficiently to cause much defoliation, there were a few sections which had localized heavy infestations. A number of towns in Maine extending westward from Sebago Lake and a few in the same general section over the New Hampshire line, had numerous small areas ranging from a few trees to several acres where the defoliation by gipsy moth larvae was quite pronounced. Towns immediately around Lake Winnepesaukee in New Hampshire to the north and west had small areas of heavy defoliation.

In Massachusetts a few towns in the vicinity of Taunton and a few in the vicinity of Buzzard's Bay had areas of greater or less extent which were defoliated.

In New Jersey the infested area was reduced considerably. Both the number of colonies and the number of egg clusters found were less than the year before.

Since the larval season one colony of quite a number of eggs clusters was located by Canadian officials at Lacolle, Quebec, a short distance over the line from Alburgh, Vermont.

Federal control work was confined to the "barrier zone" in western New England and eastern New York. All infestations where any egg clusters were found were treated and sprayed thoroughly together with a protective area around each.

The area quarantined for this insect has been extended considerably.

A number of new towns were added in Maine, and a few in New Hampshire and southern Connecticut. All of Vermont is now under quarantine. A considerable number of towns in the areas that have been added are not infested with the gipsy moth but they have been included in the general quarantine as a precautionary measure.

New Jersey

H. B. Weiss (N. J. Dept. Agr. Circ. No. 79, July): When the gipsy moth was first discovered in New Jersey in 1920 it was found, after preliminary scouting, to occur over an area of about 100 square miles. After the first year's scouting the area was found to be approximately 400 square miles. In this area, 855 colonies, totaling over 3,000,000 egg masses, were found and destroyed. After the first year's scouting and spraying work had been done, the territory was again scouted and 216 colonies, totaling 909 egg masses, were found. The infested area continued to remain at approximately 400 square miles. After two years of extermination work, 98 colonies, totaling 1,182 egg masses, were found which then occupied about 250 square miles. After three years of extermination work, a scouting of the territory resulted in finding 48 colonies, totaling 723 egg clusters. The infested territory has been reduced to less than 200 square miles.

BROWN-TAIL MOTH (Euprectis chrysorrhoea L.)

GENERAL

John N. Summers (September 1, 1923-September 1, 1924): There was probably a light infestation over the entire infested area. As in previous reports the area in southeastern New Hampshire and southern Maine was heavily infested. Extensive defoliation was noted in apple orchards in this area but no severe feeding was observed in the woodland. A few other reports have been received indicating fairly heavy infestations but from widely separated localities.

There has been practically no change in the infested area. The island of Mt. Desert, Maine, was found to be infested and has been added to the quarantined area.

SATIN MOTH (Stilpnotia salicis L.)

GENERAL

John N. Summers (September 1, 1923-September 1, 1924): Reports do not indicate a very general abundance of this insect. It is present over a considerable territory and some few towns had rather heavy infestations with considerable defoliation. There has been some extension in the infested area, a few towns having been added in southern New Hampshire and a larger extension southward in Massachusetts. One town, Dennis, on Cape Cod, has also been found to be infested.

LIME-TREE LOOPER (Erannis tiliaria Harr.)

Massachusetts A. P. Morse (October 20-21): Lime-tree winter moth in great numbers flocking to lights at Salem October 20 and 21.,

A. I. Bourne (October 24): One point of interest is a flight of the lime-tree winter moth. This flight has been noted in more or less abundance for the last week or 10 days. It was apparently at its height in the immediate vicinity (Amherst), however, about October 19-21, when the moths were very abundant anywhere near or around streetlights, porch lights, etc. Reports which have come in to Dr. Fernald and myself and observations which we have been able to make indicate that this flight was apparently very general over the State. To what degree it was abundant in other sections than here in the Valley I am unable to state.

Connecticut

J. L. Rogers (October 23): Adult moths very abundant around street lamps throughout the section around Bridgeport and New Haven.

New York

E. P. Felt (October 23): The lime-tree winter moth has attracted much attention during the last 10 days or thereabouts owing to the appearance of millions of moths at lights in the Hudson Valley from at least Kingston, north to Glens Falls and Warrensburg, and also in the foothills of the Adirondacks. The moths not only frequented the lights of cities and villages but were so generally prevalent as to be noted about dwellings in country districts and even by autoists travelling upon the highway.

WHITE-MARKED TUSSOCK MOTH (Homocampa leucostigma S. & A.)

Ohio

Herbert Osborn (October 11): The white-marked tussock moth has been quite abundant at Columbus, and injuries to apple, elm, and other trees have been noticed.

Nebraska

M. H. Swenk (September): The white-marked tussock moth has been more than ordinarily numerous on the shade trees and shrubs of Lincoln and other cities in eastern Nebraska, this being particularly true of the generation that developed largely during the month of September.

FAIR WEBWORM (Hyphantria cunea Drury)

Connecticut

W. E. Britton (October 24): Have gone over the State and made observations. Webworms are abundant on orchard and woodland trees in New London County. Less throughout the State except in New London County.

BAGWORM (Thyridopteryx ephemeraeformis Haw.)

New Jersey

R. B. Lott (October 7): Silver maples and arborvitae are almost entirely defoliated at Dayton.

Kansas

J. W. McColloch (October 17): Reports of bagworm injury to cedars and other evergreens continue to come in. Some farmers report that their trees are completely defoliated and are covered with bags.

JUNIPER SCALE (Diaspis carueli Targ.)

New York P. J. Chapman (October 7): Infested juniper twigs received from Sea Cliff, Long Island.

ASH

ASH BORER (Podosesia fraxini Lugges)

Nebraska M. H. Suenk (September): Information was received during the second week in September of the killing out of a small grove of ash trees in Cherry County by the ash sesiid borer.

BIRCH

BIRCH-LEAF SKELETONIZER (Bucculatrix canadensisella Chamb.)

New York E. P. Felt (October 23): The birch-leaf skeletonizer has not been abundant in this State except for a little, quite restricted defoliation on the sand plains west of Albany. This is in marked contrast to conditions reported from New England even as near by as the eastern slopes of the Berkshires.

BIRCH-LEAF-MINER (Fenusa pumila Klug.)

New York E. P. Felt (October 23): The newly introduced birch leaf-miner, Fenusa pumila Klug, appears to be generally established in the eastern part of the State; north at least to the vicinity of Glens Falls and along the D. & H. Railroad west to Binghamton. There were large areas of sprout birch in the vicinity of Saratoga with the young leaves very generally browned as a result of the work of this insect. There appears to be an extended breeding season.

CAMPHOR

CAMPHOR THRIPS (Cryptothrips floridensis Watson)

Louisiana H. K. Plant (September 6): Well distributed in camphor plantings in the vicinity of Goodbee, abundant, and causing considerable injury in many cases. Crop damaged about 55 per cent. (September 25): Generally distributed over New Orleans and vicinity but apparently injurious only in scattered locations. A slight increase over last month and damage of about 30 per cent.

ELM

ELM BORER (Saperda tridentata Oliv.)

Nebraska M. H. Suenk (September): The usual number of reports of injury to elm and poplar trees by this species were received during the month.

LARCH

LARCH SAWFLY (Nematus erichsonii Hartig)

Wisconsin S. B. Fracker (September): Reported from Manitowoc attacking tamarack.

LOCUST

LOCUST LEAF-MINER (Chalepus dorsalis Thunb.)

New Jersey R. B. Lott (October 11): The pest is doing considerable damage to black locust near Plainfield, and was also noted at Red Bank, Bridgeton, Vineland, and Camden.

PINE

WESTERN-PINE BEETLE (Dendroctonus brevicornis Lec.)

California and Oregon F. C. Craighead (October 28): This pest has shown marked increase in numbers throughout the greater part of the forested region of California and Oregon, and in many forests where it was endemic last year it is now epidemic.

PINE NOCTUID (Panolis griseovariegata Goeze)

Germany S. S. Crossman (October 16): Speaking of the devastated forests in Brandenburg and West Prussia, particularly the pines, I wish to state that while I was traveling from the Polish frontier toward Berlin for two hours after leaving the Polish frontier we passed through a pine area which was almost 100 per cent defoliated. I was, of course, on a train at this time and was unable to see any of the insects which were causing the injury. I asked several entomologists in Berlin if they knew the insect which was causing the damage and they told me it was Panolis griseovariegata Goeze. Of course, I am not positive that this is the species which caused the damage, not having seen it myself, but I know this insect is at times a serious enemy of pine in Europe.

A SAWFLY (Lophyrus pini L.)

Poland S. S. Crossman (October 16): In the southern part of Poland this year there was severe feeding on pine by this insect and I understand that this insect is quite often very serious.

NUN MOTH (Lymantria monacha L.)

Germany S. S. Crossman (October 16): In 1922 I saw very large areas of pine stripped near Breslau and generally over southeastern Germany by "die nonne" (L. monacha L.) and was told that the year before it was very bad over most of Bohemia.

PINE-SHOOT MOTH (Evetria frustrana Bushnelli Busck)

Kansas

J. W. McColloch (October 17): Larvae of this species were received from Tyro, Montgomery County, with the information that they were seriously injuring pine trees in that vicinity.

A MOTH (Ocnerostoma piniariella Zeller)

New York

W. T. M. Forbes (July 13): Caught in some numbers at trap for the past week at Ithaca. Not recorded from United States but specimens were taken by Prof. J. H. Comstock here in 1882. (Listed by Otto Nüsslin (Leitsaden der Forstinsektenkunde) as a leaf-miner on pine and sometimes injurious - J.A.H.)

POPLAR

OYSTER-SHELL SCALE (Lepidosaphes ulmi L.)

Ohio

E. W. Mendenhall (October 10): The Carolina poplar trees, used as street trees at Sidney, are badly infested with the oyster-shell scale and some of them are dying with the pest.

POPLAR BORER (Saperda calcarata Say)

Nebraska

M. H. Swenk (September): The usual number of reports of injury to elm and poplar trees by this species were received during the month.

WILLOW

ELM SAWFLY (Cimbex americana Leach)

New York

F. J. Chapman (October 10): Specimens received from Jamestown, Found in great numbers on willow.

I N S E C T S A T T A C K I N G G R E E N H O U S E
A N D O R N A M E N T A L P L A N T S

A MYRIOPOD (Scutigereilla immaculata Newp.)

Indiana

J. J. Davis (October 22): The small, white hothouse myriopod Scutigereilla immaculata Newp., determined by Mr. Chamberlin, was first reported to us last January as damaging lettuce in greenhouses. It again made its appearance in at least two lettuce houses in the State, in one of which the damage is severe. The animals occur especially where animal manure is used freely and where there is an abundance of moisture. They gnaw the roots of the tender seedling lettuce plants

soon after transplanting in the beds, causing the plants to wilt or "stand still." Injury to seedling radishes was also noticed out of doors in acres richly fertilized. In this same area the radishes, which were mature when examined two weeks ago, showed injury to the extent of tiny holes into the root, almost certainly the work of this animal.

ASTER

CORN-ROOT APHIS (Aphis maidi-radiciis Forbes)

Ohio H. A. Gossard (October 21): The corn root aphid was received on September 9 from Bucyrus on aster and on October 17 from Coshocton.

EUONYMUS SCALE (Chionaspis euonymi Comst.)

New York P. J. Chapman (October 12): Stems of Euonymus virgetus are thickly covered with this scale at Katonah.

IRIS

WIREWORMS (Elateridae)

Ohio Herbert Osborn (October 11): Wireworms have been reported injuring iris at Van Wert.

Indiana J. J. Davis (October 22): Wireworms were received October 6 from Van Wert, Ohio, where they were severely attacking cultivated Iris.

INSECTS AFFECTING MAN
AND DOMESTIC ANIMALS

MAN

HUMAN FLEA (Pulex irritans L.)

GENERAL STATEMENT F. C. Bishopp (September 30): These fleas were reported as causing annoyance to farmers in several instances in Ohio, Illinois, and Indiana.

CAT AND DOG FLEA (Otenocephalus felis Bouche' and C. canis Curtis)

GENERAL STATEMENT F. C. Bishopp (September 30): Many infestations of households by these species were reported in the Atlantic Coast States and also in northern Texas.

Texas

F. C. Bishopp (October 25): Throughout the late summer and fall considerable trouble has been experienced in various parts of the United States due to the infestation of houses and dog kennels with fleas. The use of creosote oil as a control measure is becoming more general.

SADDLE-BACK CATERPILLAR (Sibine stimulea Clem.)

Indiana

J. J. Davis (October 22): The saddle-back caterpillar was received September 23 and 24 from two localities in southern Indiana. In one instance contact with the caterpillars caused considerable swelling on the arm of a man, with resulting severe pain.

HORSES

BLACK HORSE-FLY (Tabanus atratus Fab.)

GENERAL
STATEMENT

F. C. Bishopp (September 30): Specimens of this fly were observed to be attacking cattle and horses in several of the Gulf States. In the vicinity of North Shore, Miss., as many as 5 or 6 flies were present per animal.

A HORSE-FLY (Tabanus lineola Fab.)

GENERAL
STATEMENT

F. C. Bishopp (September 30): This species was found to be seriously annoying to livestock pastured near swampy areas in the vicinity of Jacksonville, Fla., on September 1 and at certain other points near the Gulf Coast in Louisiana, Mississippi, and Alabama. The number per animal in the worst infested herds ranged from 2 to 50.

HORSE BOTS (Gastrophilus intestinalis DeG., G. nasalis L.,
and G. haemorrhoidalis L.)

Texas

F. C. Bishopp (September 30): Although G. intestinalis and G. nasalis appeared unusually early in the summer in the vicinity of Dallas, they have not been much in evidence recently. A few flies were found to be attacking horses in September. (October 25): The common horse bot-flies were fairly abundant in the vicinity of Dallas during October. Some annoyance was produced by the oviposition of flies on work horses. The throat bot-fly was about normal in numbers during October in the vicinity of Dallas. Work animals were decidedly annoyed by its attacks.

GENERAL
STATEMENT

F. C. Bishopp (October 25): Considerable interest is being shown in the treatment of horses with carbon disulphide in various parts of the north-central States, particularly in Minnesota, Iowa, North Dakota, and South Dakota. This interest is being stimulated by commercial companies who are selling carbon disulphide capsules.

CATTLE

SCREWORM (Chrysomya macellaria Fab.)

Texas

F. C. Bishopp (September 30): Owing to the hot, dry weather which has prevailed throughout the Southwest most of the summer and fall, little damage has been experienced by stockmen from the screwworm. Showers falling in September may cause sufficient increase in the fly number to result in infestations of sheep following shearing, which will be in full sway about October 10. (October 25): Screwworm cases in southwestern Texas during October have been much less abundant than normal. Although some sheep and goats were infested after shearing, the cases were usually light and healed after a single treatment.

At Worth packing houses on this date flies are fairly numerous and are giving some trouble trying to get indoors on account of cool nights. The proportion of the species is about as follows: C. macellaria 45 per cent, M. domestica L. 47 per cent, P. regina Meig. 7 per cent, and Lucilia sericata Meig. and other species 1 per cent.

HORN FLY (Haematobia irritans L.)

GENERAL
STATEMENT

F. C. Bishopp (September 30): During the latter part of September horn flies increased decidedly in number in various parts of Texas, owing to a cessation of the hot, dry weather which had held the pest closely in check during the summer. At Dallas on September 25 the number of flies per animal ranged from 25 to 2,500 and dairymen were beginning to complain of the worry produced among their cattle.

Comparatively few horn flies were present on livestock in northern Florida and southern Georgia, Alabama, Mississippi, and Louisiana on September 4 to 11. The usual dry weather of the late summer is undoubtedly responsible for this condition.

Texas

F. C. Bishopp (October 25): Horn flies have decreased in numbers during the last few days. During the first two-thirds of the month they were about normal in abundance and their annoyance combined with that of the stable fly seriously affected milk production in dairies in north-central Texas.

STABLE FLY (Stomoxys calcitrans L.)

GENERAL
STATEMENT

F. C. Bishopp (September 30): September 5 to 11, with the exception of a small area in southern Mississippi near Biloxi, stable flies were causing little annoyance to livestock along the highway from Jacksonville, Fla., to Houston, Tex. Near Biloxi cattle were observed to be infested with from 25 to several hundred flies each.

In the vicinity of Dallas, Texas, up to September 25, stable flies had not materially increased in numbers, the average number per animal ranging from none to about 30. Teams breaking stubble land are not experiencing the amount of annoyance usual for this time of the year.

Texas

F. C. Bishopp (October 25): During this month stable flies have been causing serious annoyance to livestock in various parts of north and central west Texas. The trouble seems to be more or less local, the supply emanating from favorable breeding places on certain farms and ranches. Some dairies in the vicinity of Dallas reported a decrease from 5 per cent to 10 per cent in milk production.

OX WARBLE (Hypoderma lineatum DeVill.)

Texas

F. C. Bishopp (September 30): D. C. Parman reports the finding of late fifth-stage larvae of this species in the subcutaneous tissues on the backs of cattle on September 5. This indicates that the larvae first appeared on the backs of the cattle this year about August 15, which is one of the earliest records for that section.

I N S E C T S I N F E S T I N G H O U S E S
A N D P R E M I S E S

YELLOW-FEVER MOSQUITO (Aedes aegypti L.)

Texas

F. C. Bishopp (September 30): These mosquitoes are present in about the usual numbers in the vicinity of Dallas. No cases of dengue have been reported to this laboratory. (October 25): Yellow-fever mosquitoes were fully as abundant as normal for this time of the year (October). A few cases of dengue fever were reported from different places in Texas during the month, the first appearance being in the latter part of September. The yellow-fever scare which came from the diagnosis of a case of the disease in Houston has subsided completely, since there has been no spread of the malady whatever.

HOUSE FLY (Musca domestica L.)

Texas

F. C. Bishopp (September 30): There was a marked increase in the number of house flies in the vicinity of Dallas during the latter half of September. They had become extremely scarce early in the summer owing to the hot, dry weather.

SCORPIONS

Texas

F. C. Bishopp (September 30): A number of complaints have been received from residences in the vicinity of Dallas that they were infested with scorpions. Some report finding as many as 4 in a house during one afternoon.

A TERMITE (Reticulitermes flavipes Kol.)

Illinois W. P. Flint (October 20): Complaints of damage by this insect have been received during the past year. In some cases the injury has been quite severe. Recently an oak floor in a house which had just been completed was found to be badly damaged by this insect.

GRANARY WEEVIL (Calendra granaria L.)

Illinois W. P. Flint (October 20): Owing partly to the fact that much of the wheat and oats were threshed when the grain was wet and went into the bins in a dampened condition, many complaints are being received of damage by this insect.

ANGOUMOIS GRAIN MOTH (Sitotroga cerealella Oliv.)

Illinois W. P. Flint (October 20): Owing partly to the fact that much of the wheat and oats were threshed when the grain was wet and went into the bins in a dampened condition, many complaints are being received of damage by this insect.

CONFUSED FLOWER BEETLE (Tribolium confusum Duv.)

Illinois W. P. Flint (October 20): Owing partly to the fact that much of the wheat and oats were threshed when the grain was wet and went into the bins in a dampened condition, many complaints are being received of damage by this insect.

FOREIGN GRAIN BEETLE (Cathartus advena Waltl.)

Illinois W. P. Flint (October 20): Owing partly to the fact that much of the wheat and oats were threshed when the grain was wet and went into the bins in a dampened condition, many complaints are being received of damage by this insect.

BOOKLOUSE (Troctes divinatoria Muell.)

Kansas J. W. McColloch (October 15): Heavy infestations of booklice have been found in upholstered furniture in warehouses at Topeka and Kansas City.

Ohio H. A. Gossard (October 21): Received on October 6 from Leetonia where it was attracting attention by its numbers in upholstery.

AN ANT (Cremastogaster laeviuscula Mayr)

Kansas Roger C. Smith (September and October): Reported from Manhattan in houses. More this year. Two reports of rather heavy swarms. They probably live within the walls and winged forms swarm out every few months. One house was infested for at least three years. Have had six major swarms and several minor ones. The woodwork does not show very much damage.

NOTES FROM THE FEDERAL HORTICULTURAL BOARD, OCTOBER 15, 1924.

INTERCEPTIONS

A very injurious thrips, identified by Prof. J. R. Watson as Liothrips vaneeckei was collected on lily bulbs from France, at Philadelphia, August 18 and 19, 1924. This pest is reported as having become established in Los Angeles County, Calif., where it was introduced on lily bulbs from France. What apparently is the same species is described as very injurious on lily bulbs in Japan. This is a pest which is well worth keeping out of the country.

The pink bollworm was again found at New York on July 31, infesting cotton seed in old cotton bagging from Alexandria, Egypt.

Anastrepha fraterculus Wied. was taken at Laredo, Texas, August 31 in guavas from the interior of Mexico. This insect has also been reported from New York and Philadelphia as intercepted on several occasions recently in mangoes from Jamaica.

Anastrepha ludens Loew, was collected in quince July 30, 1921, and in pear September 8, 1924, at Laredo, Texas. Both interceptions are reported as having come from the interior of Mexico.

Specimens of a fruit fly, identified as probably a new species of Anastrepha, were intercepted at New York August 12 in mangoes from Porto Rico.

Agriotes lineatus L. is reported as infesting turnip root (Rutabaga) from England. Specimens were collected at New York September 17.

Another insect, the turnip gall weevil (Ceuthorrhynchus pleurostigma Marsh.) was found in white globe turnips from England at New York City on August 6. This insect is a pest on various vegetables in England and does not occur in this country.

An important and possibly dangerous wireworm, determined as Athous haemorrhoidalis Fab., was collected in lily bulbs from France at New York August 23. This insect attacks vegetables, grains, and roots of grasses and is very destructive.

Larvae of the sweet potato weevil (Euscepes batatae Waterhn.) were reported as infesting sweet potatoes from Porto Rico at New York September 5.

1. The first part of the paper is devoted to a general discussion of the problem.

2. In the second part, we shall consider the case of a single particle.

3. The third part is devoted to the case of a system of particles.

4. In the fourth part, we shall discuss the problem of the interaction of particles.

5. The fifth part is devoted to the case of a system of particles.

6. In the sixth part, we shall discuss the problem of the interaction of particles.

7. The seventh part is devoted to the case of a system of particles.

8. In the eighth part, we shall discuss the problem of the interaction of particles.

9. The ninth part is devoted to the case of a system of particles.

10. In the tenth part, we shall discuss the problem of the interaction of particles.

11. The eleventh part is devoted to the case of a system of particles.

12. In the twelfth part, we shall discuss the problem of the interaction of particles.

13. The thirteenth part is devoted to the case of a system of particles.

14. In the fourteenth part, we shall discuss the problem of the interaction of particles.

15. The fifteenth part is devoted to the case of a system of particles.